

ON A EUCALYPT HYBRID (*E. CALOPHYLLA* × *E. FICIFOLIA*).

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Everyone who knows Sydney and Melbourne, and who pays attention to horticultural matters, must have noticed the great development, during the last few years, of the cultivation of what the ordinary citizen calls "Flowering-Gums." By this he means with flowers comparatively large in size and other than white in colour. Some people, a little more definite, simply call them Red-flowering, and many, Scarlet- or Crimson-flowering indiscriminately, using the terms scarlet and crimson as if they were interchangeable, just as they are said to be both "red." As one to whom flowers of various kinds are often sent I find that, as often as not, when a man writes "scarlet," he means "crimson," and vice versâ. In the case of trees like Eucalypts and Kurrajongs, which include both scarlet and crimson flowers, the confusion may be inconvenient.

Colour of flowers (filaments).

The colour of the filaments of *E. ficifolia* F.v.M., is not given in Mueller's original description, but is stated to be "crimson" in "Eucalyptographia," in the first half of the formal description, but in the second half it is described as "beautifully cinnabar-red, occasionally varying to a lighter colouration, but never very pale." Further down, in contrasting *E. ficifolia* with *E. calophylla*, he says, "the filaments (of *E. ficifolia*) are of a splendid crimson." This may be carelessness, but it probably arises from a not very clear knowledge of English terms for the colours concerned.

I have received from Dr. G. P. U. Prior, Mental Hospital, Rydalmerc, near Sydney, flowers which are true *E. ficifolia*. They are bright scarlet in colour or, in the language of Plate No. 79 of Rép. de Couleurs, bright fiery-red or russet-orange.

The filaments do not contrast with the whitish anthers for the pollen-masses are scarlet too.

The calyx-tubes are suffused with scarlet, and so the whole inflorescence is of a uniform tone of colour.

Dr. Prior's No.2 is a shrub at present; it is the *E. ficifolia alba* of nurserymen; it has white filaments, with a suspicion of colour at the base, arising from the coloured rim. Calyx-tube green. A little colour on the operculum.

In *E. calophylla* R.Br., the filaments are white or creamy, and I saw the trees in flower over large areas in their native habitats. Mr. W. V. Fitzgerald states that the filaments are "rarely pink"; this indicates a tendency.

The muddle that Mueller got into as regards the filaments of *E. ficifolia* is continued by the nurserymen. Large numbers of plants are sold; indeed, the demand exceeds the supply. I need scarcely observe that precision is desirable, and sometimes necessary, in speaking of the colours of flowers; the following is a useful work of reference. "Répertoire de Couleurs (quoted as Rép. de Couleurs) publié par la Société Française des Chrysanthémistes," &c. (Rennes and Paris, 1905). Two portfolios of plates and a handbook.

In Vilmorin's (Paris) Catalogue of Plants, the colour of the flowers of *E. ficifolia* is given as "rouge carmin," which is not a colour admitted, as such, into Rép. de Couleurs. The firm is evidently following the late M. Naudin, a great French authority on the genus, who, Mém. Eucal., i., 555, says - "*E. ficifolia* qui les a d'un rouge carmin très brillant, au moins dans une de ses variétés."

In examining the catalogues of good Australian firms, I find the following given under *E. ficifolia*.

1. "Red-flowering Gum," 20 feet. This colour may mean anything.

2. Scarlet, 15 feet; "Scarlet-flowering Gum" 15 feet. Scarlet is correct.

3. Crimson, 20 feet; Crimson-flowered Gum, 20 feet; "Bright Crimson" 15-20 feet. This may or may not be a confusion with

scarlet, as begun by Mueller; I shall have something to say about a Crimson-flowering Gum presently.

Then one firm has:—

6. "Scarlet flowering Gum, 15 feet, literally a blaze of beautiful rich crimson shade."

In examining the catalogues of Australian nurserymen, I cannot find one which describes the colour of *E. calophylla* correctly. It should be white. One firm calls it "rich pink."

Several firms, however, have *E. calophylla rosea* in their lists, either without comment, or "Bright pink, 30 feet," or "Similar to *E. ficifolia* but rosy pink flowers."

I think this view of the case is correct; the rose- or crimson-flowering forms, which are large-growing (getting size from their *calophylla* parent, and their colour more or less from their *ficifolia* parent). The habit of these trees reminds me more strongly of *E. calophylla* than of *E. ficifolia*, and, as to colour, we have them of all shades of the faintest blush-pink (almost white) to deep crimson.

The flowers of *E. ficifolia* and *E. calophylla* are honey-smelling, the perfume heavy and oppressive in a room. They flower mostly in December and January, and the climatic conditions in Sydney, during the last season, have induced an exceptionally fine display of bloom.

I have received from Dr. Prior, flowers, fruits, and seeds of what I call No.1. The flowers are Tyrian Rose in colour; see Plate No.155 of Rép. de Couleurs. There is a short, white attachment to the anther, which is creamy-white in colour, with a line of Tyrian rose running round the back, and this colour is sometimes blurred. When old, the anther-cells inside take a pinkish shade. The pollen is creamy-white.

In Proc. Roy. Soc. Qsld., x., 17 (1893), the late F. M. Bailey described "what is probably an accidental sport" in the Melbourne Botanic Gardens, with flowers of a "deep rose" as *E. ficifolia* var. *Guilfoylei* "It proved to be only a form of *E. ficifolia* differing from the normal plant in its smaller foliage, more compact inflorescence, different colour of flowers, with prominent umbo to the operculum and slight difference of seed-

wing. I have received specimens of this form both from the late Mr. Guilfoyle and from Mr. J. Cronin. The yellow anthers contrast well with the filaments. The calyx-tubes are urceolate and apple-green, and both on account of the contrast of filaments with anthers and calyx-tubes, the effect in the mass is most charming.

The Rydalmere tree is 40 feet high, and flourishing. In every respect that I can see, it is identical with *E. ficifolia* var. *Guilfoylei* and *E. calophylla* var. *rosea* Hort., and I am inclined to think that the more reasonable view is to look upon it as a form of *E. calophylla*. The habit and size of the hybrid incline to those of *E. calophylla*, while the pink or purple tinge (in contradistinction to the scarlet of *E. ficifolia*), naturally occurs in *E. calophylla*.

Size and habit.

E. calophylla is a huge tree, with gnarled trunk and scrambling, umbrageous branches, the counterpart of the Apple (*Angophora intermedia*), of Eastern Australia. The size is given as up to 150 feet, with a stem-diameter of 10 feet ("Eucalyptographia") and I am certain this is not exaggerated.

E. ficifolia, on the other hand, is a small tree; I think it rarely exceeds thirty feet in height, and it is usually erect, and not scrambling.

The hybrid may be fairly stated as intermediate in size.

Seeds.

Those of *E. calophylla* are large, ovate, black, flat, and with a raised angle on one face, the edges acute but scarcely winged, the hilum large on the inner face.

Those of *E. ficifolia* are of a pale colour, testa expanded at one end, or round one side into a broad, variously-shaped wing (B.Fl., iii., 256). The hilum is towards the end of the seed, and furthest from the wing.

The seeds of the *E. calophylla* × *E. ficifolia* hybrid are flatter than those of *E. ficifolia*, and also paler in colour. As compared with those of *E. ficifolia*, they are a little darker and less winged, but the hilum is more remote from the wing. In other words,

they are intermediate between the two species. Most of the seeds are, however, sterile, and these are pale reddish-brown in colour, shining, and mostly boomerang-shaped.

The sterile seeds of *E. calophylla* are similar in shape, perhaps a little darker in colour.

It seems to me that, in this rose-crimson series, we have incontrovertible evidence of hybridisation, the two most obvious factors being colour and size; and I, therefore, add *E. calophylla* and *E. ficifolia* to the very long list of pairs of species of which the evidence that they hybridise appears to be sufficiently clear.

I have touched on the general question of hybridisation in the genus in Report Aust Assoc. Adv. Science, 1904, p.297, in the Proceedings of this Society, xxx., p.492 (1905), and on many other occasions.